UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,442	06/26/2003	Dinesh G. Dutt	ANDIP031	7363

22434   7590   03/28/2008
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EXAMINER
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ART UNIT	PAPER NUMBER
2619	

MAIL DATE	DELIVERY MODE
03/28/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
	10/609,442	DUTT ET AL.
Office Action Summary	Examiner	Art Unit	
	ROBERT C. SCHEIBEL	2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _28 January 2008_.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1,2,5-18 and 20-29_ is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) _1,2,5-18 and 20-29_ is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

- Examiner acknowledges receipt of Applicant's Request for Continued Examination (RCE) filed 1/28/2008.

- Claims 1, 8, 9, 13, 15, 16, 23, 24, 26, and 28 are currently amended.

- Claims 1, 2, 5-18, and 20-29 are currently pending.

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/28/2008 has been entered.

Response to Arguments

2.   Applicant's arguments see page 8, filed 1/28/2008, with respect to the objection to claim 26 have been fully considered but they are not persuasive. Applicant has amended claim 26, but did not change the line which was objected to in the previous office action. The objection is maintained herein.

3.   Applicant's arguments, see page 8, filed 1/28/2008, with respect to the objection to claims 1, 8, 9, 11, 12, 14, 15, 23, 24, 28, and 29 have been fully considered and are persuasive. The objection to claims 1, 8, 9, 11, 12, 14, 15, 23, 24, 28, and 29 has been withdrawn.

4.   Applicant's arguments, see pages 8-9, filed 1/29/2008, with respect to the rejection of claims 1 and 15 under 35 U.S.C. 102(e) have been considered but are moot in view of the new grounds of rejection. The new grounds of rejection continues to use the Czeiger reference as a primary reference in a 103(a) rejection and thus Examiner addresses the relevant portions of Applicant's arguments in the following paragraph.

In the third paragraph on page 8, Applicant argues that Czeiger does not disclose "mechanism 'configured to enable communication between the first set of end devices in the first fabric with the second set of end devices associated with the second fabric while maintaining the unique Domain_ID addresses of the first set of end devices and the second set of end devices.'" In the rest of the third paragraph and the fourth paragraph, Applicant expands this argument to indicate that as translates the addresses when communicating between SANs, the Domain_ID is not maintained. However, Examiner respectfully disagrees. Czeiger indicates that a benefit of the method is that the end devices can retain their local addresses (which include a Domain_ID). See lines 31-33 of column 2. This clearly indicates that the end devices (clients) maintain their Domain_ID addresses.

Examiner recommends that Applicant amend the claim language to distinguish the means by which the present invention communicates between SANs while maintaining the Domain_ID from the way that Czeiger solves this problem.

5.   Applicant is silent with respect to the rejection of claim 23 under 35 U.S.C. 112, second paragraph. However, claim 23 has been amended to overcome this rejection and thus the rejection of claim 23 under 35 U.S.C. 112, second paragraph has been withdrawn.

Claim Objections

6.   Claims **1, 8, 9, 11, 12, 14, 15, 23, 24, 26, 28, and 29** is objected to because of the

following informalities:

- The phrase Domain_ID is not used consistently (see claims 1, 9, 14, 15, 24, and

  29). In places it is "Domain ID" and in others it is "Domain_ID". Please select

  one of these and change the other instances accordingly. The latter style is used

  throughout the specification.

- In claims 9 and 24, line 11, the phrase "the VSAN" doesn't have antecedent basis

  in the claims. Examiner assumes Applicant intends the language "a VSAN" and

  requests the claim to be amended as such.

- In claim 26, line 5, the phrase "the name server" doesn't have proper antecedent

  basis in the claims. Examiner assumes Applicant intends the language "a name

  server" and requests the claim to be amended as such.

- The acronym "RCSN" and "SW_RCSN" appears in several claims (such as 13

  and 28) and should be similarly changed (to "RSCN" and "SW_RSCN").

- In claim 23, line 5, the acronym FSPF should be defined as this is its first use in

  the claim tree.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
such that the subject matter as a whole would have been obvious at the time the invention was made to a person
having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
manner in which the invention was made.

8.   This application currently names joint inventors. In considering patentability of the

claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c)

and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9.   Claims **1, 2, 5-11, 14-18, 20-26, and 29** are rejected under 35 U.S.C. 103(a) as being

unpatentable over U.S. Patent 6,985,490 to Czeiger et al in view of NCITS Standard "Fibre

Channel Switch Fabric-2 (FC-SW-2)".

        Regarding claim **1**, Czeiger discloses an apparatus, comprising:

        a Switch (the combination of elements 26 and 96 in Figure 2) configured to couple a first

fabric (FC SAN A 22 of Figure 2) having a first set of end devices (clients 24 of Figure 2, for

example) and a second fabric (FC SAN B 42 of Figure 2) having a second set of end devices

(clients 44 of Figure 2, for example), each of the first set of end devices and the second set of end

devices having a unique Domain-ID address (the first byte of the address (see lines 23-28 of

column 1) – corresponding to the virtual switch – this is also known as the Domain_ID in the art

(such as the Fibre Channel standards)) respectively, the Switch configured to enable

communication between the first set of end devices in the first fabric with the second set of end

devices associated with the second fabric (discussed throughout; see abstract as well as lines 55-

58 of column 2, for example, which describe how end devices in the first SAN can communicate

with end devices in the second SAN) while maintaining the unique Domain_ID addresses of the

first set of end devices and the second set of end devices (also discussed throughout; see lines

63-64 of column 1 and lines 31-33 of column 2, for example; these passages clearly indicate that

the client addresses (including the Domain_ID) are not changed (and are thus maintained) as a

result of this method for communicating between SANs),

      wherein the first fabric and the second fabric are configured to be separate physical

fabrics (FC SANS A and B of figure 2 as well as lines 56-59 of column 1); and

      the Switch is a Border Switch that is configured to be part of both the first fabric and the

second fabric (see figure 2 which shows the switch (the combination of elements 26 and 96) as

part of both fabrics).

      Czeiger similarly discloses the limitations of claim **15**.

      Czeiger does not disclose _expressly_ the limitation that the Border Switch is configured to

send frames of information including Fabric Shortest Path First (FSPF) frames between the first

fabric and the second fabric to enable communication between members of the first set of end

devices and the second set of end devices.

      However, Czeiger does suggest that the SAN switches are communicating routing

information between each other. Consider the situation in Figure 6 where a link fails between

two of the SANs. The SAN switch is able to re-route traffic around this failure through an

alternate SAN switch. Further, the use of Fabric Shortest Path First (FSPF) as a means of

communicating routing information between SAN switches is known in the art. Consider

chapter 8 (starting on page 95) of FC-SW-2 which discloses FSPF. In the middle of page 95,

FC-SW-2 states that one of the purposes of FSPF is to maintain the topology database in cases where an Inter-Switch Link goes down or comes up. This is the same situation disclosed in Figure 6 of Czeiger.

Czeiger and FC-SW-2 are analogous art because they are from the same field of endeavor of SAN switching. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Czeiger to explicitly indicate the use of FSPF as a means of maintaining topology information between the SAN switches and thus enabling communication between the first and second sets of end devices. The motivation for doing so would have been to maintain topology information to allow proper routing of SAN frames in the event of a link outage. Therefore, it would have been obvious to combine FC-SW-2 with Czeiger for the benefit of properly maintaining topology information to obtain the invention as specified in claims 1 and 15.

Regarding claims **2 and 17**, Czeiger discloses the limitation that the first and second fabrics are first and second Virtual Storage Area Networks respectively in that the switches within each of SAN A and SAN B are combined into virtual switches (see figure 2 and lines 13-33 of column 2, for example).

Regarding claims **5 and 20**, Czeiger discloses the limitation that the first fabric and the second fabric are Edge fabrics and further comprising a Transit fabric configured to carry traffic between the first fabric and the second fabric in Figure 2. The Switch (the combination of elements 26 and 96) is clearly located at the edge of the SANs. Element 54 is a transit fabric which carries traffic between the two other fabrics (see lines 61-63 of column 3 as well).

Regarding claims **6 and 21**, Czeiger discloses the limitation that the first fabric and the second fabric are adjacent to each other and the Switch is configured to directly switch traffic between end devices in the first and second fabrics in Figure 2 as well as Figure 5 which show how frames (traffic) are switched between end devices on each SAN.

Regarding claims **7 and 22**, Czeiger discloses the limitation that the Border Switch is configured within an Inter-VSAN zone, the Inter-VSAN zone including members from the first set of end devices associated with the first fabric and the second set of end devices associated with the second fabric. See figure 2, lines 15-22 of column 3, figure 4, and lines 10-41 of column 7. These figures and passages explain how to configure the Switch (by updating the translation tables) so that the end devices in FC SANs A and B so that they can communicate with each other; this set of end devices in the translation tables is interpreted as a zone and it clearly contains members from both fabrics.

Regarding claims **8 and 23**, Czeiger discloses the limitations that the Border Switch determines via the Inter-VSAN zone: (i) the content of a name server database that is exported from one of the adjacent fabrics to the other and vice versa (see lines 34-48 of column 2 and lines 28-32 of column 7; the passage in column 7 indicates that the virtual switch identification is part of the name server database content and the passage in column 2 indicates the decision of which of this content to export); (ii) the set of FSPF domains to export in Link State Update (LSU) messages (see lines 34-48 of column 2 which indicates that the LSR is exported to the compound network); (iii) the set of addresses to switch from one of the adjacent fabrics to the other and vice versa (the translation tables discussed throughout); and (iv) the set of adjacent fabrics to which Switch Register State Change Notifications (SW_RSCNs) received from a

fabric are propagated and vice-versa (see lines 34-48 of column 2; the gateway determines which virtual switches and LSR information to be exported and clearly identifies where (which fabrics) to forward this information).

Regarding claims **9 and 24**, Czeiger discloses the limitation that the Border Switch is configured to (v) rewrite the VSAN of a frame received from the first VSAN to the second VSAN if traffic is destined to the second VSAN in the second and third steps of figure 5.

Regarding claims **10 and 25**, Czeiger discloses the limitation that the Border Switch in the Inter-VSAN zone supports the definition and exchange of Inter-VSAN zones in figure 2, lines 15-22 of column 3, figure 4, and lines 10-41 of column 7. The updating of the translation tables defines the Inter-VSAN zones. The process by which the relevant information in these tables is passed to other fabrics (see lines 34-48 of column 2 for example) discloses the exchange of the Inter-VSAN zone.

Regarding claims **11 and 26**, Czeiger discloses the limitation that the name server database in the Border Switch is configured to: (i) build the list of name server entries to be exported from a first fabric to the second fabric and vice-versa (see lines 34-48 of column 2 and lines 28-32 of column 7; the passage in column 7 indicates that the virtual switch identification is part of the name server database content and the passage in column 2 indicates the decision of which of this content to export).

Regarding claims **14 and 29**, Czeiger discloses the limitation that the Switch enables communication between the end devices in the first fabric and the second fabric while maintaining the unique Domain_IDs of each of the first set and the second set of end devices by: (i) administratively partitioning the domain number space across the fabrics (the partitioning of

the switch ids to each of the switches; see lines 23-30 of column 1 which indicates that the

switch identifiers are administered to identify each switch); or (ii) associating a range of

Domain-IDs to be used only for Inter-VSAN routing.

Regarding claim **16**, Czeiger discloses the limitation that the communication mechanism

is a Switch configured to couple the first fabric and the second fabric, the Switch configured to

enable communication between the first set of end devices in the first fabric with the second set

of end devices associated with the second fabric while maintaining the unique Domain ID

addresses of the first set of end devices and the second set of end devices (the translation table

(updated in Figure 4) enables communication between the first and second sets of end devices; as

indicated above, the addresses of the end devices are not changed (see lines 63-64 of column 1

and lines 31-33 of column 2, for example)).

Regarding claim **18**, Czeiger discloses the limitation that the first fabric and the second

fabric are separate physical fabrics in FC SANS A and B of figure 2 as well as lines 56-59 of

column 1.

10.   Claims **12-13 and 27-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over

U.S. Patent 6,985,490 to Czeiger et al in view of NCITS Standard "Fibre Channel Switch

Fabric-2 (FC-SW-2)" and in further view of U.S. Patent Application Publication 2004/0230787

to Blumenau et al.

Czeiger discloses all limitations of parent claims 11 and 26 as indicated in the rejection

under 35 U.S.C. 102(e) above. Czeiger does not disclose expressly the limitations of claims 12

and 27 of Switch Register State Change Notifications being generated across the fabrics when

the name server database changes. Blumenau discloses sending an RSCN whenever the system

configuration changes in paragraph 45 on page 6. Czeiger and Blumenau are analogous art

because they are from the same field of endeavor of Fibre Channel systems. At the time of the

invention it would have been obvious to a person of ordinary skill in the art to update other

switches in the system of configuration changes using RSCN messages as in Blumenau. The

motivation for doing so would have been to dynamically keep the system updated of

configuration changes. Therefore, it would have been obvious to combine Blumenau with

Czeiger for the benefit of dynamic configuration updates to obtain the invention as specified in

claims 12 and 27.

Regarding claims **13 and 28**, Czeiger, modified, discloses the limitation that the Border

Switch is further configured to prevent the replication of RCSNs in one of the following ways:

(i) selecting a first Switch and a second Switch in the first or second fabric for distributing

RCSNs in each fabric respectively; (ii) statically configuring the fabrics; or (iii) selecting a

specified Switch to distribute the RCSNs (the switch which is the combination of elements 26

and 96 of figure 2 is selected to provide the configuration updates via it's gateway as indicated in

lines 34-48 of column 2).

Conclusion

11.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

- US Patent 7,161,935 to Alonso et al discloses a method for network fabric management

  using an adjunct processor inter-fabric service link.

- US Patent Application Publication 2004/0233921 to Krieg et al discloses a virtual switch

  for use in fibre channel applications.

- US Patent 6,473,421 to Tappan discloses hierarchical label switching across multiple

  OSPF areas.

- US Patent 6,219,699 to McCloghrie et al discloses a multiple VLAN architecture system.

Any inquiry concerning this communication or earlier communications from the
examiner should be directed to ROBERT C. SCHEIBEL whose telephone number is (571)272-
3169. The examiner can normally be reached on Mon-Fri from 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Wing F. Chan can be reached on 571-272-7493. The fax phone number for the
organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent
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Robert C. Scheibel
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3/24/08